Agenda Item No. 9

Meeting of the Central Valley Flood Protection Board
January 16, 2009

Central Valley Flood Protection Board Staff Report

Board Action

Consider approval of Resolution 09-01 to adopt findings, mitigation measures and the mitigated negative declaration under the California Environmental Quality Act for the construction of setback levees at levee mile 3.9 and 4.2 of the left bank of Cache Creek and consider approval of the project.

Consider approval of Resolutions 08-23, 08-24, 08-25 and 08-26 approving the Resolutions of Necessity to commence the eminent domain proceedings to obtain levee and flood control easements for APN 027-170-39-1, APN 027-170-02-1, APN 027-160-05-1 and APN 027-160-06-1.

Location

The proposed project is located along Cache Creek in Yolo County, approximately 26 miles northwest of Sacramento (Figure 1). The proposed setback levee sites are on the left bank of Cache Creek at levee miles (LM) 3.9 and 4.2, southeast of the town of Yolo and north of the City of Woodland. These levees are part of the Sacramento River Flood Control Project, under the Board's jurisdiction.

The project site is rural in nature and is surrounded by agricultural, rural residences, and orchard lands. Interstate 5 is southwest of the proposed setback levee sites. There are two residences immediately to the north of the project site. Some native and predominantly nonnative vegetation comprise the riparian habitat along Cache Creek levees and its banks at the project site.

Description

DWR is proposing, on behalf of the Board, to construct two setback levees on the left bank of Cache Creek at LM 3.9 and 4.2 (Figure 2). This project would be constructed in accordance with the regulations and standards prescribed by the United States Army Corps of Engineers (USACE) for providing levee protection.

The setback levee at LM 3.9 would be constructed approximately 215 feet north of the existing eroding bank and would be approximately 1,259 feet in length (Figure 3). A ramp would be constructed to allow vehicle access to County Road 17a. The existing levee would be notched in two locations to allow water to drain from the levee setback area back into Cache Creek. These notches would be approximately 10 feet wide and would be degraded to the same elevation as the original ground.

The setback levee at LM 4.2 would be constructed approximately 90 feet north of the existing eroding bank and would be approximately 670 feet in length (Figure 4). A retaining wall would be constructed adjacent to a small portion of levee setback LM 4.2L to allow the landowner access to an existing structure that would abut the new levee. The existing levee would be notched in one location to allow water to drain from the levee setback area back into Cache Creek. The notch would be approximately 10 feet wide and would be degraded to the same elevation as the original ground.

Both setback levees would be between 40 and 50 feet wide at the base, with a 12-foot-wide gravel road along the top of the levee. The height of the setback levees would be approximately 6 to 10 feet above original ground. The crest elevation would be 82 feet to be consistent with the height of the existing levee. The slope of the setback levees would be 2:1 on the landside and 3:1 on the waterside. The area of potential effect for the project site is approximately 11 acres. Up to 45,000 cubic yards (cy) of fill would be needed for construction of both setback levees, and the fill would be hauled in from off-site. Fill material would be transported from an existing storage site where it was stored after being obtained from Yolo County in 2007 during its water treatment plant expansion. This storage site is located approximately 5.5 miles from the project site.

To allow construction of setback levee LM 3.9L, an approximate 1,300-foot-long stretch of County Road 17a would be relocated north of the existing road and would be shortened to approximately 1,100 feet long (Figure 2).

Background

The Cache Creek system has a high potential for levee overtopping and failure. On December 16, 2003, an assessment of the equilibrium of Cache Creek was performed by DWR. This assessment concluded that the creek is extremely incised near the town of Yolo. There is a substantial risk of flooding at several erosion sites, including at LM 3.9 and 4.2 The erosion sites are deep, steep-walled, and in close proximity to the levee section.

Upstream of the project sites, gravel mining has caused the lower reach of Cache Creek to become sediment starved, resulting in significant downcutting of

the creek bed. (Since 1958, the creek has downcut as much as 35 feet.) This, in conjunction with the erodible soil material and the great fluctuations in river flows and velocities seen in the narrow channel, subjects the Cache Creek system to significant geomorphological changes. As current erosion patterns continue, levee integrity and flood protection along Cache Creek will be severely compromised.

Additionally, the levees around the Cache Creek system currently provide only 10-year flood protection, which has been exceeded multiple times in the recorded history of Cache Creek. The 10-year protection that the levees provide equates to approximately 31,000 cubic feet per second (cfs) of flow through the channel. As the flood flows approach and exceed this value, the integrity of the levees begin to be compromised. Overtopping of the levee causes failure by eroding the landside slope of the levee until it advances through the levee, causing failure. Table 1 shows a record of significant flood events that have occurred in Cache Creek.

Table 1 – Flood Events in the Cache Creek System – 1958 to 2002

Date	25 Feb 1958	23 Dec 1964	6 Jan 1965	24 Jan 1970	27 Jan 1983	9 Jan 1995	9 Mar 1995	1 Jan 1998	3 Feb 1998	16 Dec 2002
Flood Peak (cfs)	**41,400**	26,200	**37,800**	**34,600**	**33,000**	**32,000**	**36,400**	28,700	**34,600**	22,300

Overtopping occurred in January 1983 when the north levee (left bank) was breached and uncontrolled flooding occurred (Figure 5). In several other instances, notably in March 1995 and February 1998, overtopping of the levees occurred; however, major flood fighting efforts by DWR prevented levee failure.

Repair Alternatives

The two erosion sites at LM 3.9 and 4.2 were identified as critical in the USACE "2006 Critical Erosion Repair" report. In 2006, The Governor of the State of California issued a declaration of flood emergency, identifying 104 critical erosion sites in need of immediate remediation, which included the Cache Creek LM 3.9 and 4.2 sites. Presently, these are the only two sites from this list that have not been repaired.

In 2006, DWR assumed responsibility for repairing the two erosion sites. An analysis of repair alternatives found two feasible repairs: an in-stream repair and setback levees.

The in-stream repair consists of placing rock slope protection along the eroding bank overlain with a soil layer and installed native plantings. This not only provides bank protection from erosion, but it also increases the stability of the

existing river bank. The plantings are required environmental mitigation for the bank area that would be covered with the rock and soil.

Due to the narrowness of the channel, adding this rock slope protection decreased the channel capacity to such an extent that the change in water surface elevation increased by nearly one foot. The USACE has a criterion that bank protection measures may not cause a change in surface water elevation greater than 0.1 ft. The change in water surface elevation under the in-stream repair significantly exceeded that USACE criterion. To resolve that issue a portion of the opposite bank would be excavated to reduce the change in water surface elevation to the acceptable limit. The excavation of the opposite bank (Figure 6) increases the cost of the alternative, and reduces the berm width of the opposite bank, effectively reducing the longevity of the south levee.

The setback levee alternative, as described herein, offers a more robust design with a life expectancy nearly double that of the in-stream alternative. The cost of constructing the in-stream alternative is approximately $5.4 million, compared to the cost of the setback alternative at $3.4 million, as shown in Table 2. Additionally, since the setback levee would not be constructed in the creek channel, the setback levee would not disrupt existing in-stream riparian habitat, and the environmental impacts and mitigation costs would be greatly reduced. The setback levee was selected as the preferred alternative.

Table 2 - Cache Creek Alternatives Cost Comparisons (2008 costs)

Instream Alternative
Rock Slope Protection on Left Bank, Excavation of Right Bank

Site 3.9		$2,672,000
Site 4.2		$2,762,000
	Sub-Total	**$5,434,000**

Set-Back Alternative
Two levees (Partial land purchase both sites)

Site 3.9		$1,800,000
Site 4.2		$ 710,000
Detention Basin Excavation		$ 471,000
Acquisition Administrative Costs		$ 400,000
	Sub-Total	**$3,381,000**

It is important to note that the bank erosion repairs at these two Cache Creek sites are conducted under the Sacramento River Bank Protection Project. The Sacramento River Bank Protection Project is not a long-term solution to the regional flooding and erosion problems present on Cache Creek. DWR,

FloodSafe Yolo, along with the USACE, are currently evaluating options for a long-term, regional solution to the deficiencies of the Cache Creek system.

Construction of the setback levees at Cache Creek LM 3.9 and 4.2 has been delayed due to real estate/acquisition issues. Fortunately, during this delay there have been no significant flood events that have overtopped or eroded the existing levee. However, these two sites are still considered critical and in need of immediate remediation to prevent levee failure. The land acquisition is necessary to build setbacks and as acquisition negotiations have not been successful, the Resolution of Necessity is required to proceed for acquisition.

Requirements for Resolution of Necessity

To obtain the requested resolution of necessity, the following four requirements have been satisfied as described below.

1. Public interest and necessity require the project.

- Cache Creek LM 3.9 and 4.2 have been identified as critical erosion sites in need of immediate repair by the USACE (2006 USACE Critical Repair Report) and in the 2006 Governor's declaration of flood emergency.
- The Cache Creek system has a significant history of flooding and levee overtopping. The current flow areas are restricted and in-stream repairs (adding rock fill to the channel) would further aggravate the situation. These setback levees are required to accommodate commonly occurring flows.
- The inundation area of a levee failure at either of the setback locations includes numerous houses, public roads, a school building where children are present during a portion of the day and acres of farmland, all of which are in jeopardy of low levels of inundation under the current conditions of the bank erosion (Figure 7).
- Levee failures and breaches result in flood fighting and in the past overtopping at several locations would have resulted in failures if DWR did not engage in flood fighting operations.

2. The Project is planned or located in the manner that will be most compatible with the greatest public good and the least private injury.

- The designs of the setback levees have taken into consideration actions to accommodate and benefit the affected landowners. These include splitting the setback levee into two distinct reaches to minimize the impacted land area; reducing the length of the setback levee at LM 4.2 to protect a stand of trees that have sentimental value to the property owner; and the inclusion of a retaining wall at LM 4.2 to allow the property owner and tenants to fully utilize the shop/garage on the property.

- Avoiding any construction in the river channel and riparian habitat area almost completely removes the significant environmental impacts associated with this typical in-stream repair.
- The cost savings associated with constructing the setback levees versus the in-stream alternative is approximately $2 million.
- The setback alternative offers a more robust design, provides a sub longer service life and provides longer duration of protection from erosion.

3. The property sought to be acquired is necessary for the project.

- The distance from the existing river bank to the proposed location of the setback levee waterside toe is based on a 50-year rate of erosion, which is the USACE requirement for setback levee design.
- The setback levee geometry (crest width, embankment slopes, levee height) conforms to minimum USACE levee design standards.
- The alignment of the proposed setback levees was designed to minimize land impacts.
- The project cannot proceed without the acquisition of appropriate interests in real property from the owners.

4. The offer required by Section 7267.2 of the Government Code has been made to the owner of record.

- Upon the receipt of the final design from the Division of Engineering's (DOE), Geotechnical and Structures Branch, the DOE's Real Estate Branch (REB) initiated the land acquisition process.
- In compliance with Government Code, Section 7267.2, offers of just compensation were made to the impacted property owners of record. Just compensation was determined by appraising the properties at fair market value as defined in California Code of Civil Procedure, Section 1263.320.
- All of the affected property owners were sent letters which indicated that DWR intended to appraise their properties and that the property owners were invited to accompany the Department of Water Resource's appraiser. All four property owners participated in the field analysis of their property. The final appraisal reports were prepared and approved in October 2007.
- In November 2007, the First Written Offers, based on the approved appraisals, were presented to the property owners in person. The First Written Offer package contained the following items: First Offer Letter, Right of Way Contract, and Appraisal Summary Statement, a map of the Comparable Sales, the Comparable Sales Data Sheets, an Acquisition Map, and an Easement Deed.
- To date, open negotiations to acquire the necessary real property rights have been unsuccessful. The land acquisition process secures the necessary rights either through open negotiation as proposed, open negotiation as modified through an administrative settlement, or Eminent

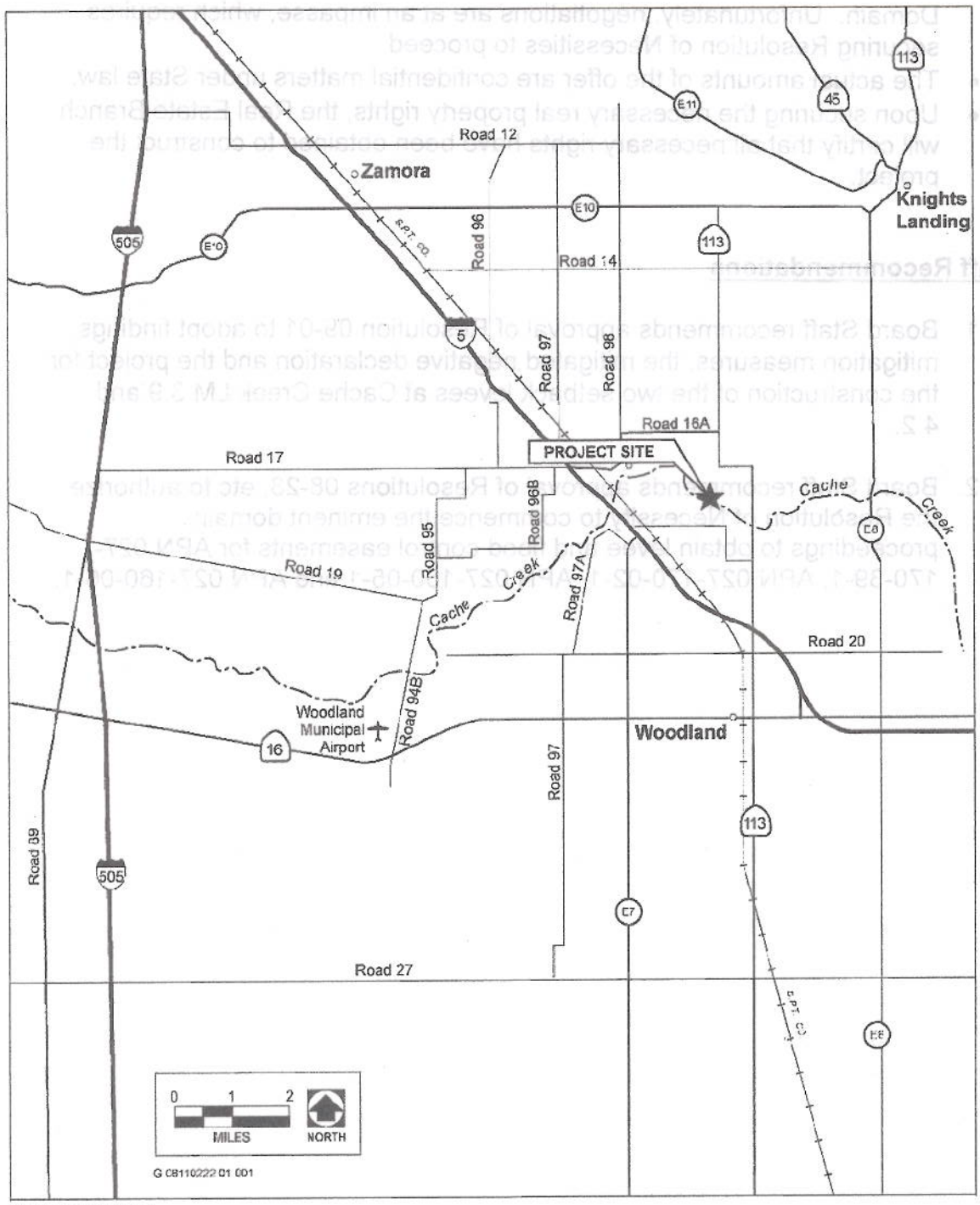
Domain. Unfortunately, negotiations are at an impasse, which requires securing Resolution of Necessities to proceed.

- The actual amounts of the offer are confidential matters under State law.
- Upon securing the necessary real property rights, the Real Estate Branch will certify that all necessary rights have been obtained to construct the project.

Staff Recommendations

1. Board Staff recommends approval of Resolution 09-01 to adopt findings, mitigation measures, the mitigated negative declaration and the project for the construction of the two setback levees at Cache Creek LM 3.9 and 4.2.

2. Board Staff recommends approval of Resolutions 08-23, etc to authorize the Resolution of Necessity to commence the eminent domain proceedings to obtain levee and flood control easements for APN 027-170-39-1, APN 027-170-02-1, APN 027-160-05-1 and APN 027-160-06-1.



Source: EDAW 2008

FIGURE 1 – Cache Creek Setback Levee Project Location Map

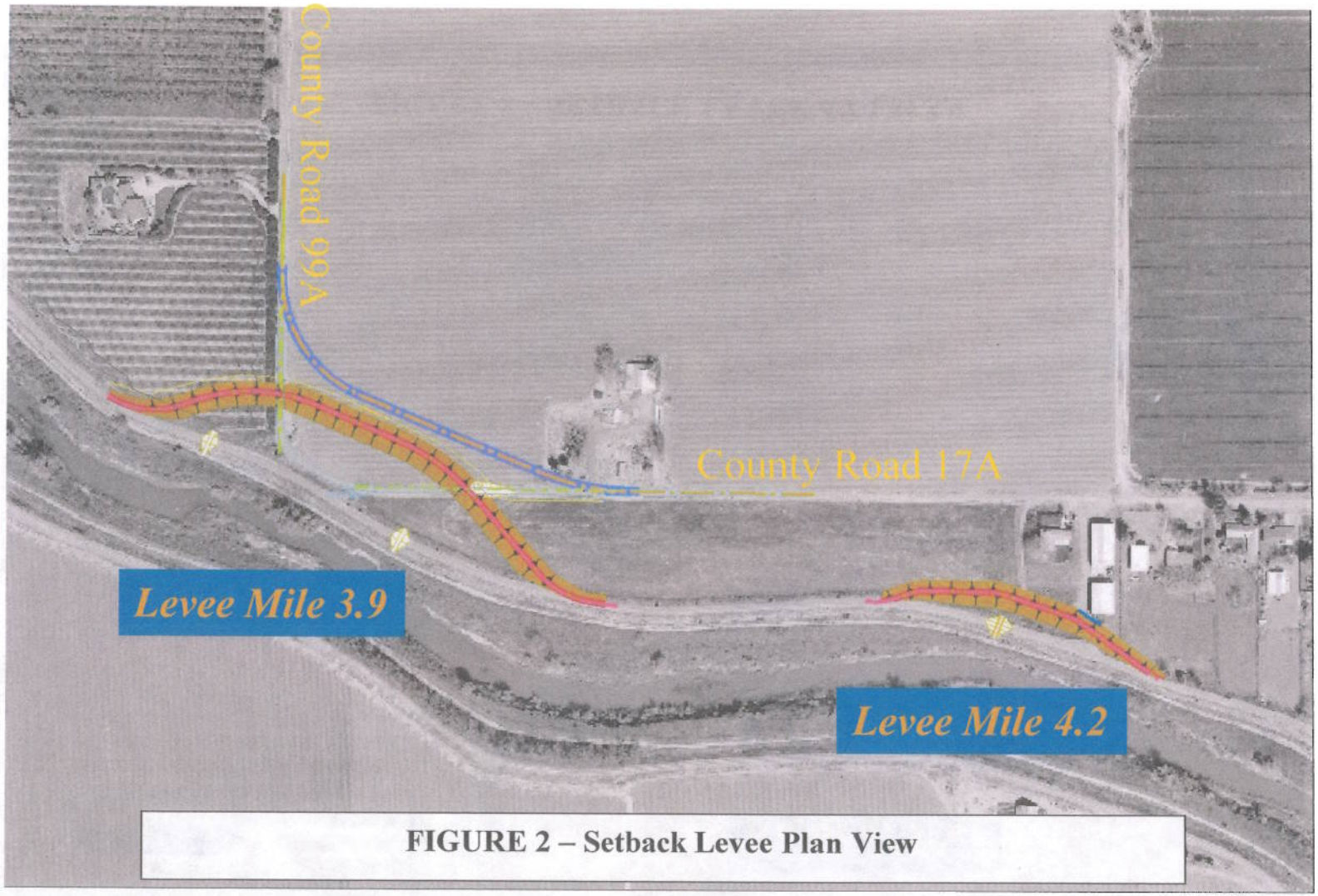


FIGURE 2 – Setback Levee Plan View

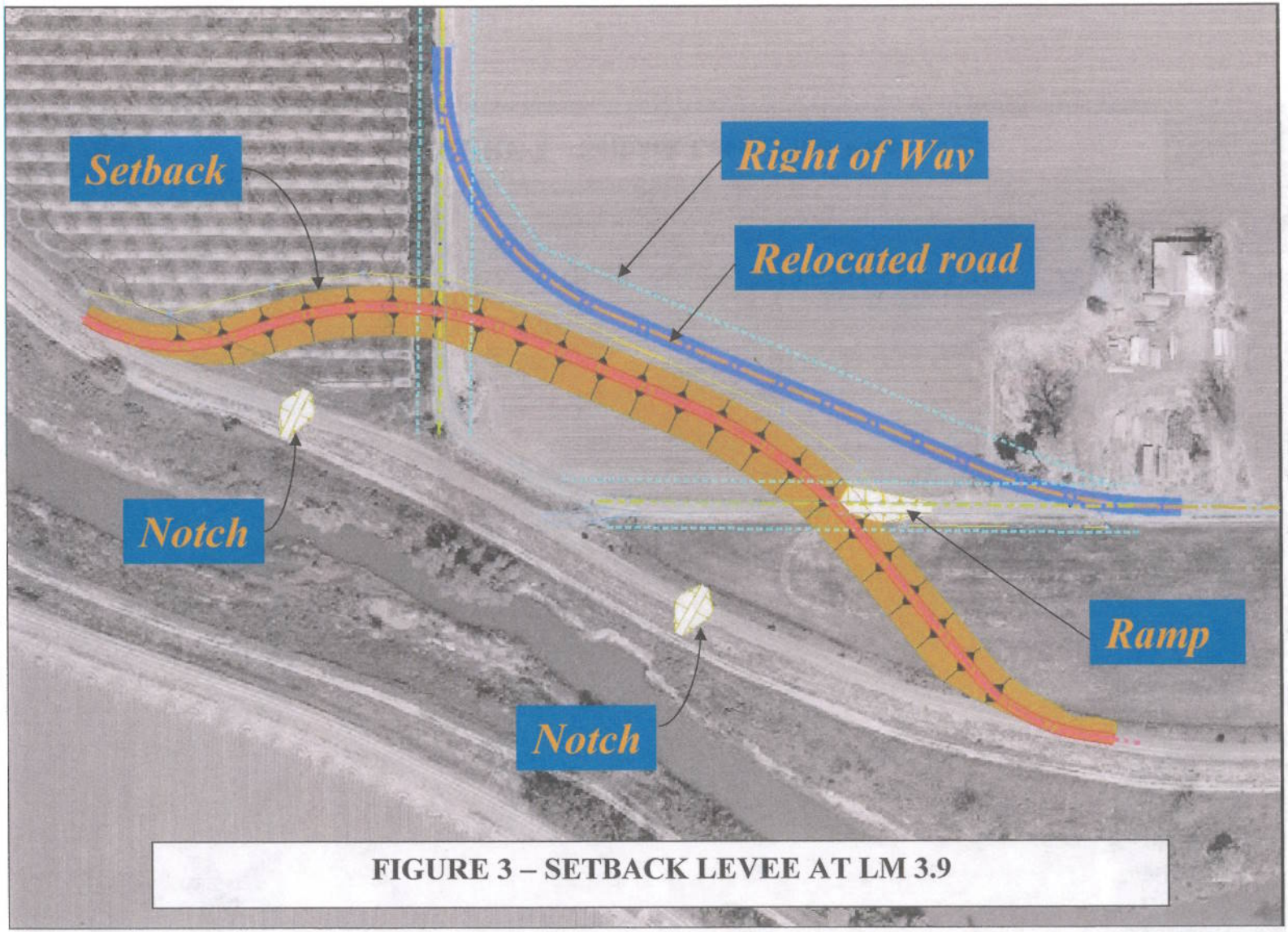


FIGURE 3 – SETBACK LEVEE AT LM 3.9

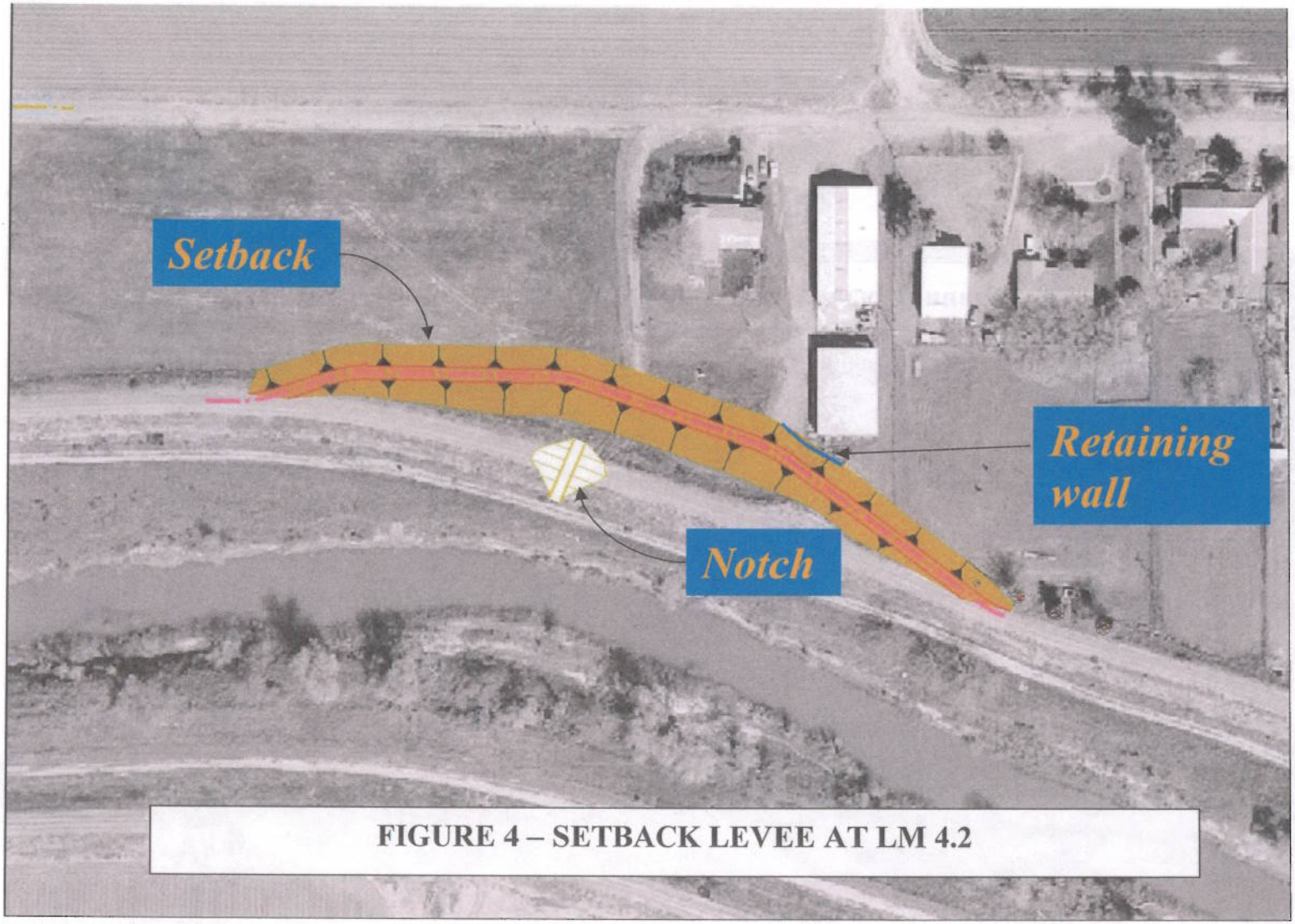


FIGURE 4 – SETBACK LEVEE AT LM 4.2